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PAIN

Is an unpleasant sensory and emotional experience associated with actual and potential tissue damage, or described in terms of such damage. (American Pain Society[APS],2003;Gordon,2002)

Nature of pain

- Pain is subjective and highly individualized.
- Its stimulus is physical and/or mental in nature.
- It interferes with personal relationships and influences the meaning of life.
- Only the patient knows whether pain is present and how the experience feels.
- May not be directly proportional to amount of tissue injury

Qualities of Pain

- Organic vs. psychogenic
- Acute vs. chronic
- Malignant or benign
- Continuous or episodic

Types of Pain

Acute/transient pain

Protective, identifiable, short duration; limited emotional response

Chronic episodic

Occurs sporadically over an extended duration

Inferred pathological

Musculoskeletal visceral, or neuropathic

Chronic/persistent noncancer

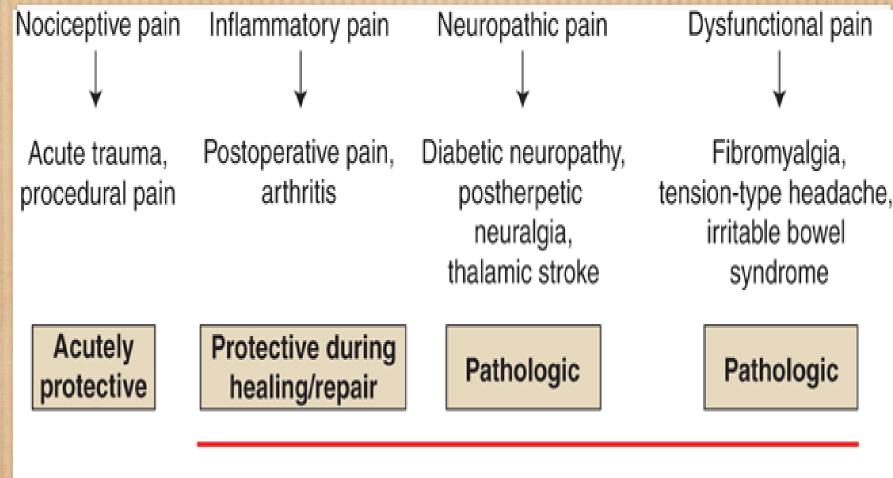
Is not protective, has no purpose, may or may not have an identifiable cause

Cancer

Can be acute or chronic

Idiopathic

Chronic pain without identifiable physical or psychological cause

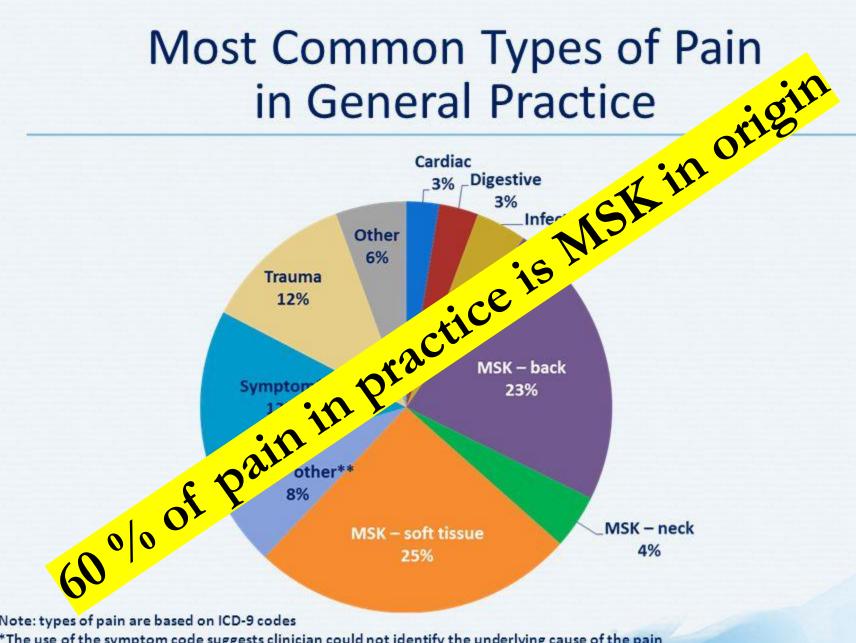


High threshold

Low threshold

Source: Longnecker DE, Brown DL, Newman MF, Zapol WM: Anesthesiology, 2nd Edition: www.accessanesthesiology.com

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Note: types of pain are based on ICD-9 codes

ICD = International Classification of Disease; MSK = musculoskeletal

Hasselström J et al. Eur J Pain 2002; 6(5):375-85.

^{*}The use of the symptom code suggests clinician could not identify the underlying cause of the pain

^{**}MSK - other refers to musculoskeletal pain at sites other than the neck, back or soft tissue

Acute vs. chronic pain

Months-years

Unpredictable

Slow

required

Commonly absent

Depression, anxiety

Usually multimodal

Often profound

MSK		
Acute	Chronic	
	of four two	

Hours-days

Predictable

Uncommon

Primary analgesics

Few/none

Present

Rapid

Duration

Prognosis

Treatment

Associated cause

Nerve conduction

Associated illness

Social sequelae





Examples of acute painful MSK conditions

Trauma

Disc

Tendonitis\
Sprain

Muscle strain

Acute\Septic arthritis









Acute pain medications

Pain Medication	UK %	Ireland %	Europe Average %
Paracetamol	38	5	18
NSAID	23	32	44
Cox-2 Inhibitors	3	8	6
Weak Opioids	(50)	19	23
Strong Opioids	12	13	5

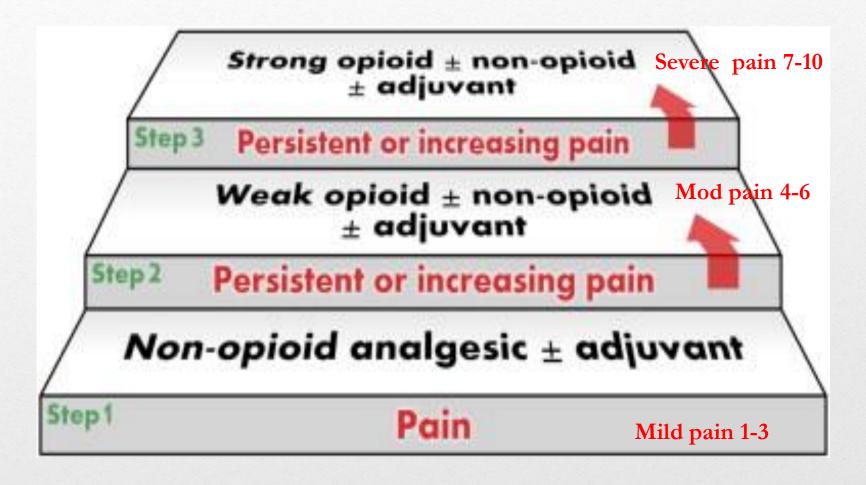
edited from Brievik et al 2006 and Donaldson 2008





When & How To use opioids?















Opioid Use cont.

Weak oral opioid dose	Equivalent oral morphine dose	Conversion factor from weak oral opioid to morphine
Oral codeine 60mg or oral dihydrocodeine 60mg	≈ Oral morphine 5mg	Divide by 10
Oral tramadol 50mg *	≈ Oral morphine 5 to 10mg	Divide by 5 to 10
Oral nefopam 30mg *	≈ Oral morphine 10mg	Divide by 3
Choosing and changing opioids in palliative care Table 1. Version 2 March 2015		



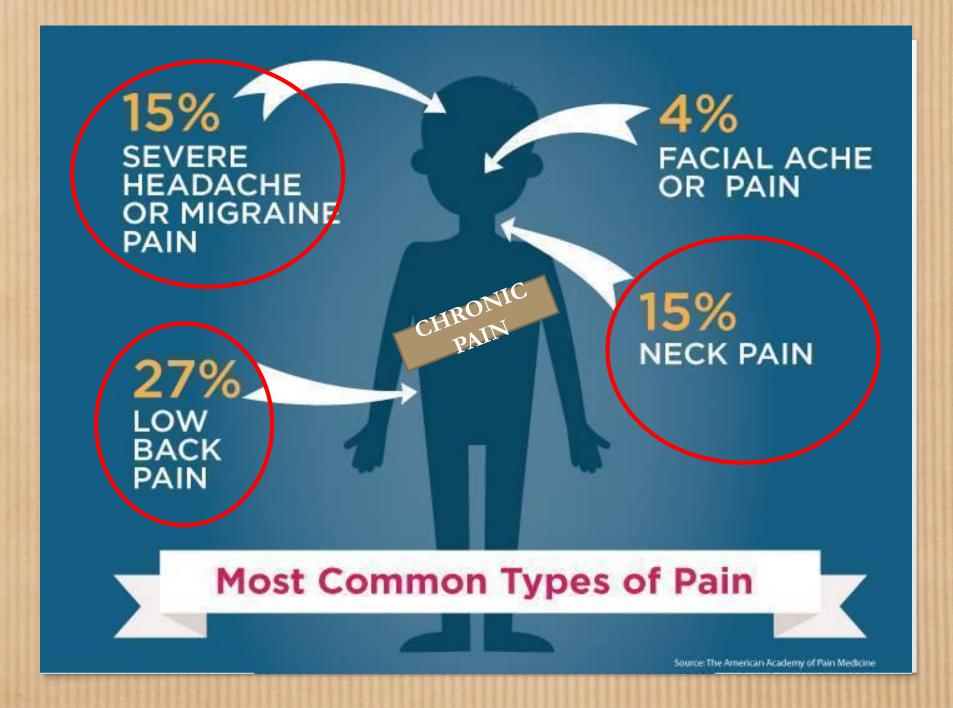
Chronic pain



Chronic pain has a <u>psycho-social component</u> that must be dealt with before depression becomes a part of the clinical picture. Chronic pain should be recognized as a <u>multi-factorial disease state</u> requiring intervention at many levels.

Table	1.	Chronic	Pain	Disorders
		7.5 7.7	17 11	

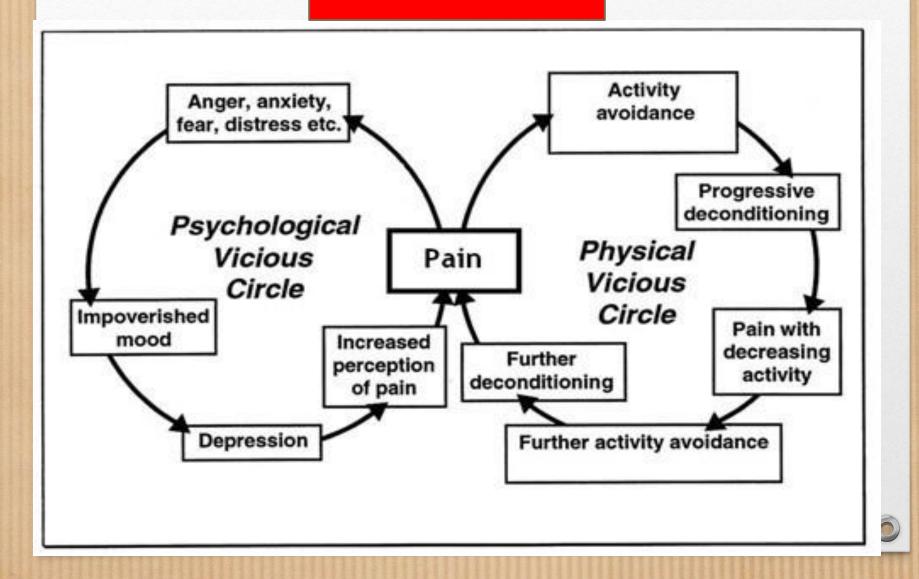
Neuropathic Pain	Mixed Pain	Nociceptive Pain
Neuropathic Pain Peripheral neuropathies (diabetes, HIV) Postherpetic neuralgia Trigeminal neuralgia Central post-stroke pain Spinal cord injury Neuropathic low back pain	Migraine and chronic daily headache Fibromyalgia Phantom limb pain Complex regional pain syndrome Multiple sclerosis Low back pain	Mechanical low back pain Rheumatoid arthritis Osteoarthritis Chronic inflammatory conditions Somatoform pain disorder
	Myofascial pain syndrome Skeletal muscle pain	Postoperative painSickle cell crisisSports/exercise injury







Pain Sequela



Psychosomatic Pain

Pain in the Arms



Painful Menstrual Cycles



Pain during Intercourse



Headaches

Types Of
Psychosomatic
Pain



Body Pain



Back Pain



Abdominal Pain

ePainAssist.com

Effects of Chronic Pain on the Patient

Physical Functioning

- Ability to perform activities of daily living
- Sleep disturbances

Psychological Morbidity

- Depression
- Anxiety
- Anger
- Loss of self-esteem

Social Consequences

- Relationships with family and friends
- Intimacy/sexual activity
- Social isolation

Societal Consequences

- Healthcare costs
- Disability
- Lost workdays

EVALUATION OF CHRONIC PAIN

- MEDICAL EVALUATION:
- Location, onset.
- Quality, radiation.
- Response to previous treatments.
- h/o past,personal,social,economic,psychological and emotional status.
- Plain radiographs, CT, MRI, bone scans.



CONT..

- Electromyography and Nerve conduction studies:
- Useful for confirming diagnosis of entrapment syndromes, neural trauma and polyneuropathies, radicular syndromes.
- Can distinguish b/n neurogenic and myogenic

disorders.

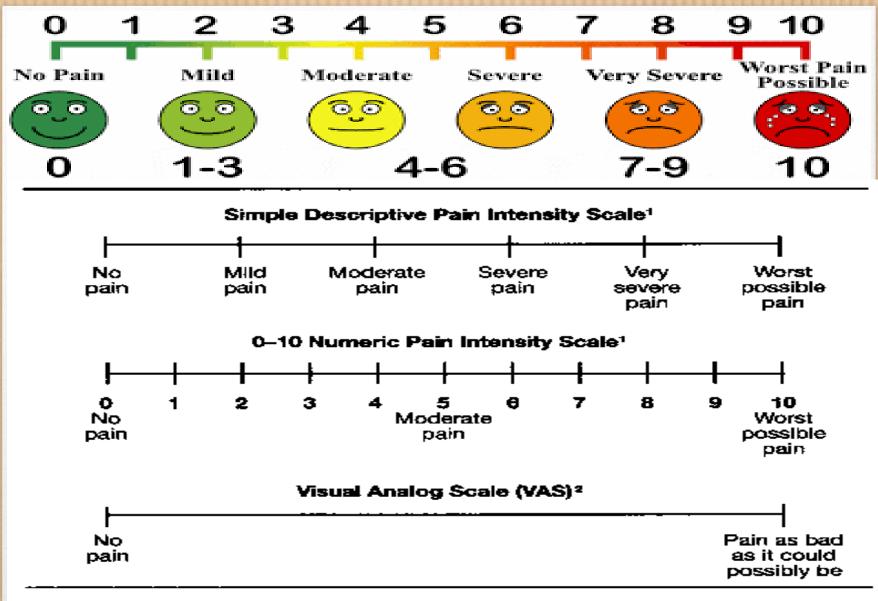
MEASUREMENT OF PAIN

Reliable quantitation of pain severity helps determine therapeutic interventions and evaluate the efficacy of treatments.

PAIN SCALES:

- Numerical rating scale.
- Faces rating scale
- Visual analog scale.
- McGill pain questionnaire.





¹ If used as a graphic rating scale, a 10 cm baseline is recommended.

²A 10-cm baseline is recommended for VAS scales.

CHRONIC PAIN MANAGEMENT GOALS

- Improvements in nociception, not curing.
- Decrease pain and suffering
- Increase daily activity.
- Instill hope



THERAPEUTIC MODALITIES

- PHARMACOLOGICAL.
- 2. PHYSICAL MEASURES/NON PHARMACOLOGICAL.
- 3. PSYCHOLOGICAL MEASURES.
- 4. INVASIVE TECHNIQUES.







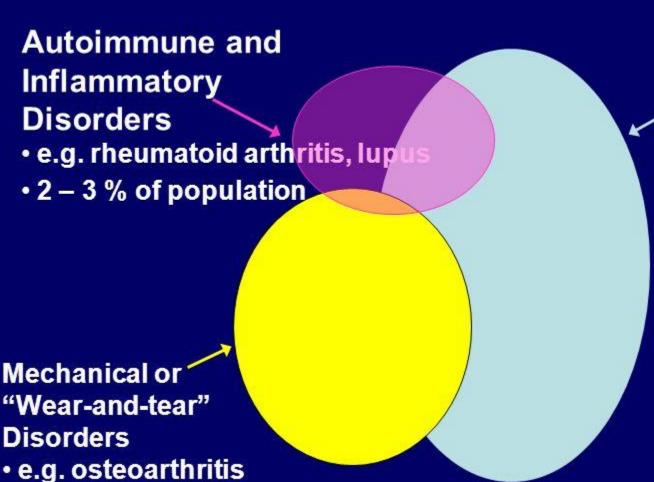


INTERVENTIONAL TECHNIQUES IN THE MANAGEMENT OF CHRONIC PAIN

MINIMALLY INVASIVE PROCEDURES

- injections of drugs to target areas
- ablation of targeted nerves
- implantation of intrathecal infusion pumps
- implantation of spinal cord stimulators
- □ some surgical techniques (IDET, annuloplasty, nucleoplasty)

What's Causing Chronic Pain?



prevalence very age-

dependant

Idiopathic Pain Syndromes

- e.g. fibromyalgia, headaches, irritable bowel
- 15 20% of population have sx. severe enough to seek medical attention
- frequently co-exist with inflammatory and mechanical disorders

THREE MAIN TYPES OF PATHOPHYSIOLOGY

can be considered to result in chronic pain1

Pain related to damage of somatic or visceral tissue, due to trauma or inflammation

NOCICEPTIVE PAIN

Examples:

Rheumatoid arthritis, osteoarthritis, gout Pain related to damage of peripheral or central nerves

NEUROPATHIC PAIN

Examples:

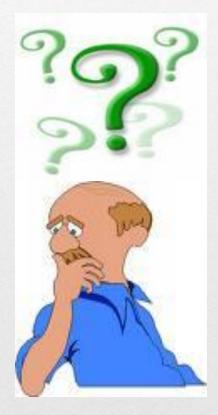
Painful diabetic peripheral neuropathy, postherpetic neuralgia Pain without
identifiable nerve or
tissue damage, hypothesized
to result from persistent neuronal
dysregulation—may be called

SENSORY HYPERSENSITIVITY

> Example: Fibromyalgia

More than 1 type of pain may be present in a given patient



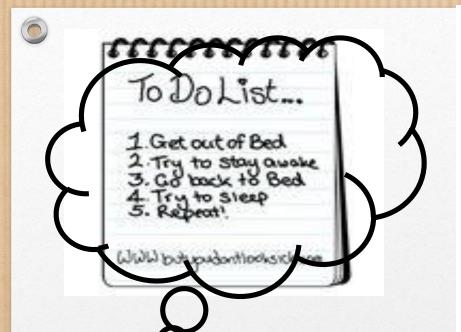








- Common: It affects 2.4% of the general population making it the second most common rheumatologic disorder after osteoarthritis.
- Misdiagnosed: 25% of patients referred to rheumatology clinics based on positive ANA test results had FMS.
- Underestimated: In fibromyalgia, aches with depression and/or anxiety are present in approximately 25% of patients.





Fatigue Irritability

Brain Fog

Restless Legs

Overlapping Syndromes

Muscle & Joint Pain

You Never Feel Good

Anxiety & Depression

Loss of Control

Grief & Worry

mmune Dysfunction

A Lifetime Fight





WHAT IS FIBROMYAGIA????

•Fibromyalgia is a disorder of the central nervous system and musculoskeletal system ccc by pain, associated with mood state alteration, reduced physical activity and fatigue.

•Additional symptoms associated with fibromyalgia include insomnia, nonrefreshing sleep.





Patients may also experience 1 or more cooccurring pain syndromes, such as irritable bowel (IBS), interstitial syndrome cystitis, temporomandibular joint disorder, and tension headaches, over their lifetime.

□Symptoms are often exacerbated by exertion, stress, lack of sleep, and weather changes.

Is It:

A somatization disorder or a "fashionable" expression of psychological distress?.

- Psychiatric comorbidities
- Inadequate response to treatment
- A lack of objective evidence of disease (e.g. positive lab tests)



All contributed to the belief that these pain syndromes are psychiatric in nature.





Pathogenesis of FMS:

Many Theories

- •Dysfunction of the hypothalamic-pituitary-adrenal axis.
- •High Substance P
- •Nerve growth factor is higher in the spinal fluid of patients with fibromyalgia than in others. (imp. for production of substance &also may play a role in perceived pain signals).





• Genetics Theory:

systems, serotonin, and norepinephrine.

An elegant study that showed that the first-degree relatives of fibromyalgia patients were <u>8.5</u> times more likely to have fibromyalgia than the first-degree relatives in the control group. The genes that have been looked at to date involve the <u>monoamine</u>

a. Arnold LM, et al. Arthritis Rheum. 2004;50:944-952; b. Bondy B, et al. Neurobiol Dis. 1999;6:433-439; c. Offenbaecher M, et al. Arthritis Rheum. 1999;42:2482-2488; d. Buskila D, et al. Mol Psychiatry. 2004;9:730-731; e. Gürsoy S, et al. Rheumatol Int. 2003;23:104-107.



Neurotransmitters Theory:



The second pathways appear to be dysfunctional in patients with fibromyalgia. So SNRI drugs are restoring a normal filtering mechanism that is broken

Deficiency of Descending Analgesic Activity in Fibromyalgia^[a,b]

Opioids

- Normal or high levels of CSF enkephalins^[c]
- Not studied in an RCT, but most believe that opioids are ineffective or marginally effective
- Harris recently used PET to show decreased muopioid receptor binding in fibromyalgia^[d]

Noradrenergic/ Serotonergic

- Low levels of biogenic monoamines in CSF in fibromyalgia^[e]
- Nearly any class of drug that raises both serotonin and norepinephrine has demonstrated efficacy in fibromyalgia

CSF = cerebrospinal fluid; RCT = randomized, controlled trial.

a. Kosek E, Hansson P. Pain. 1997;70:41-51; b. Julien N, et al. Pain. 2005;114:295-302; c. Baraniuk JN, et al. BMC Musculoskelet Disord. 2004;5:48; d. Harris RE, et al. J Neurosci 2007;27:10000-10006; e. Russell IJ, et al. Arthritis Rheum. 1992;35:550-556.



•Significant brain 99mTc-ethylcysteinate dimer (Single Photon

Emission Computed Tomography) SPECT perfusion abnormalities

including:



Hyperperfusion of the somatosensory cortex

(nociceptive perception) and Hypoperfusion in the frontal, cingulate, medial temporal, and cerebellar cortices (affective—attentional response to pain).

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Autonomic Theory



- ✓ Sympathetic hyperactivity
- Pseudo Raynaud's phenomenon
- Constant dryness in the mouth



✓ Relentless sympathetic hyperactivity

low blood pressure, dizziness, fogginess, and faintness.







- •The exacerbation of the pain and fatigue after light exercise.
- Numbness in the peripheries
- Postural hypotension
- •SSR delay by NCS
- Mitochondrial abnormalities by EM

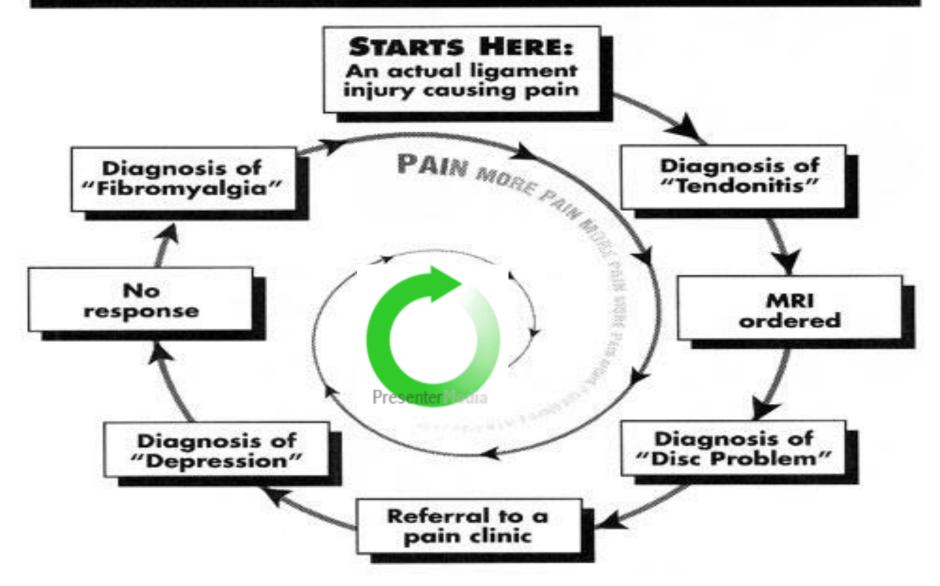
- * suggest that fibromyalgia is related to both chronic sympathetic hyperactivity and
- <u>structural muscle abnormalities.</u>



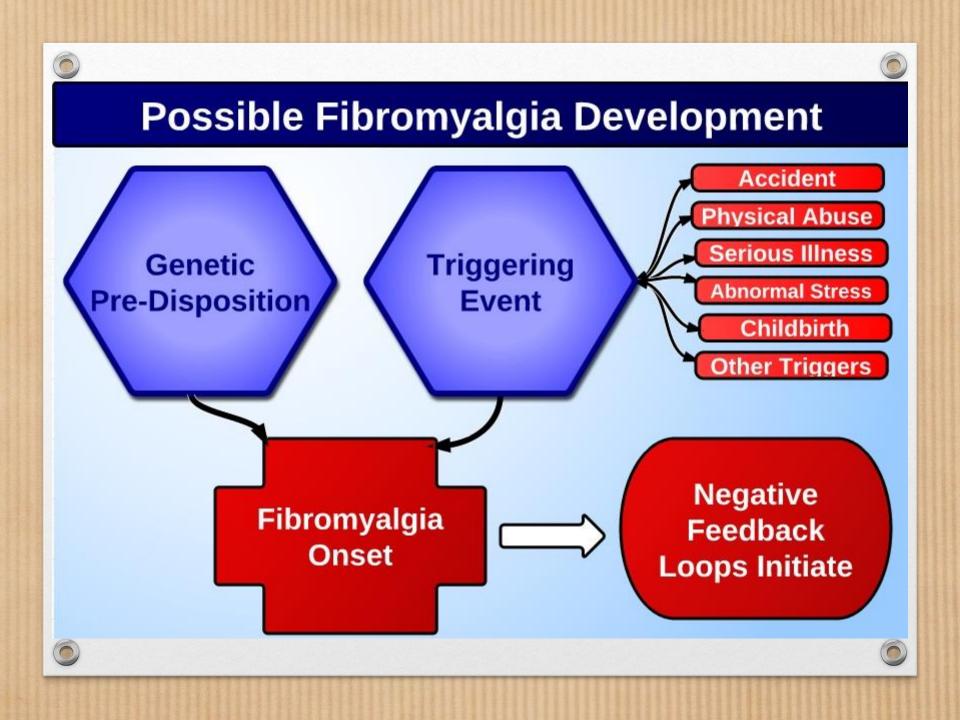
SO

There is a definite neural and muscular change in fibromyalgia syndrome, which may be the cause of chronic pain and fatigue among those patients.

THE TYPICAL PROGRESSION TO THE DIAGNOSIS OF FIBROMYALGIA



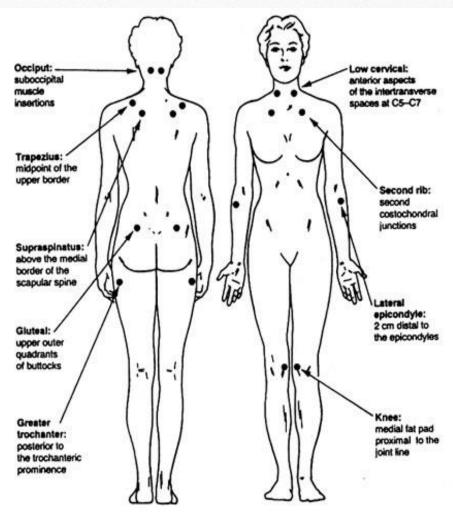
The Typical Progression to the Diagnosis of Fibromyalgia
Simple ligament laxity causes trigger points and chronic pain, but because it isn't diagnosed and treated properly, the above scenario is all too frequent.





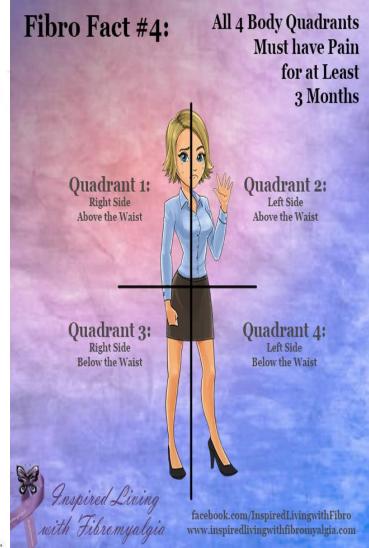


Old criteria



Fibromyalgia Tender Points

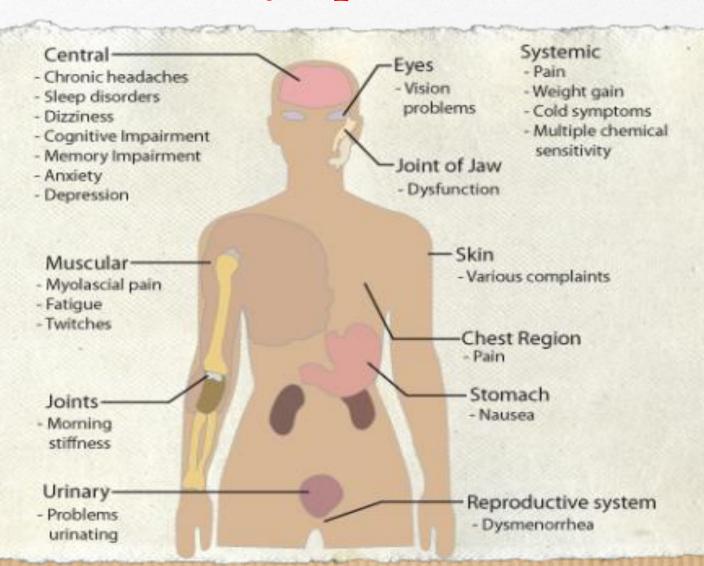
General locations of the 18 tender points that make up the criteria for identifying fibromyalgia.







Other CCC symptoms of FMS:





New Criteria (2010):

- •The new criteria keep the requirements that *other causes*be ruled out and that symptoms have to have persisted for at least 3 months.
- •They also include 2 new methods of assessment, the widespread pain index (WPI) and the symptom severity (SS) scale score.





Widespread Pain Index (WPI)
In how many areas has
the patient had pain in
the last week?

Score = 0-19

Shoulder (L/R); Upper arm (L/R); Lower arm (L/R); Jaw (L/R); Neck; Buttock; Hip trochanter (L/R); Upper leg (L/R); Lower leg (L/R); Upper back; Lower back; Chest; Abdomen Symptom Severity Scale (SS)
What was the level of symptom
severity in the last week?

Score = 0-12 0 (no problem), 1 (slight), 2 (moderate), 3 (severe)

Fatigue; Waking unrefreshed; Cognitive disturbances; General somatic symptoms

Patient satisfies the 2010 Fibromyalgia Clinical Diagnostic Criteria if WPI ≥ 7 and SS score ≥ 5

or WPI between 3-6 and SS score ≥ 9

Table 1. Widespread Pain Index

Note the number of areas in which the patient has had pain over the last week. Score will be between 0 and 19.

Shoulder girdle, left Shoulder girdle, right Upper arm, left Upper arm, right Lower arm, left Lower arm, right

Hip (buttock, trochanter), left Hip (buttock, trochanter), right Upper leg, left Upper leg, right Lower leg, left Lower leg, right

Jaw, left Jaw, right Chest Abdomen

Upper back Lower back Neck

Source: Reference 20.

For the SS scale score, the patient ranks specific symptoms on a scale of 0-3. These symptoms include:

- Fatigue
- Waking unrefreshed
- Cognitive symptoms
- •Somatic (physical) symptoms in general (such as headache, weakness, bowel problems, nausea, dizziness, numbness/tingling, hair loss)

The numbers assigned to each are added up, for a total of 0-12.







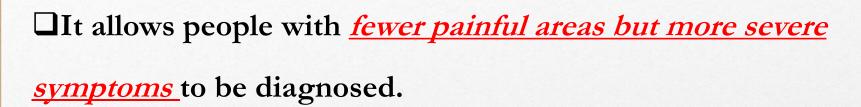
•WPI of at least 7 and SS scale score of at least 5,

•OR

•WPI of 3-6 and SS scale score of at least 9.







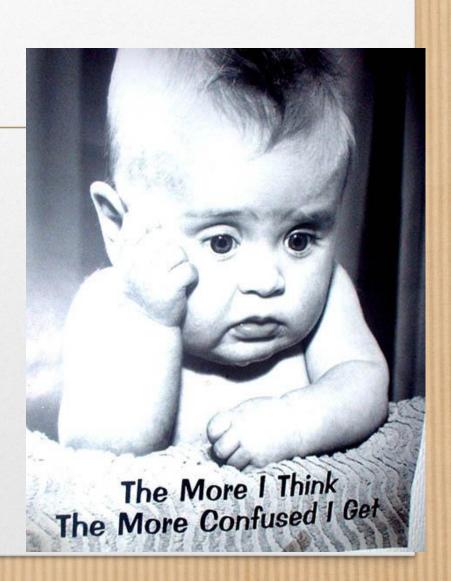
- ☐ It finally includes <u>cognitive</u> symptoms.
- ☐ It also recognizes the difference between "fatigue" and "waking unrefreshed".
- The scoring system allows <u>easier follow up</u> of treatment.
- □Some <u>flexibility</u> is built in, which recognizes the fact that fibromyalgia impacts patients differently, and that symptoms
- ©can fluctuate.



Differential Diagnosis of FMS:



- Chronic fatigue syndrome (CFS)
- Hypothyroidism
- Hepatitis C virus
- Hypovitamonosis D
- Polymyalgia rheumatica
- Diabetes M
- Anaemia
- Malignancies
- Osteomalacia
- Inflammatory arthropathies,
- Spondyloarthropathy,
- Radiculopathy



FM and CFS Differences:



• **Pain** is the most predominant symptom in FMS, extreme **fatigue** in CFS.



• Additional distinct differences include:

- 1. Substance P (a neurotransmitter that transmits pain signals) is elevated in FM but not CFS.
- 2. RNaseL (a cellular antiviral enzyme) is frequently elevated in CFS but not in FM.
- 3. Often CFS will be triggered by a flu-like or infectious illness, while FM is more often triggered by some kind of trauma to the body (i.e.psychic or physical).







Vitamin D & FMS are they related??



- Vitamin D deficiency is common in fibromyalgia
- Occurs more frequently in patients with anxiety and depression.
- Observed improvement in the overall condition of fibromyalgia patients using vitamin D:

They all indicate a strong connection between the disease and the function of vitamin D.

However, this does not mean that fibromyalgia is simply a deficiency of vitamin D in the body; the latter is only a factor in developing or aggravating symptoms of fibromyalgia.



Investigations:





- ESR
- T3, T4, TSH
- Blood sugar
- **CPK**
- AST ALT
- RF-ANA
- HCV Ab

Either done to prove primary FMS (being all normal) or to diagnose secondary Fibromyalgia.

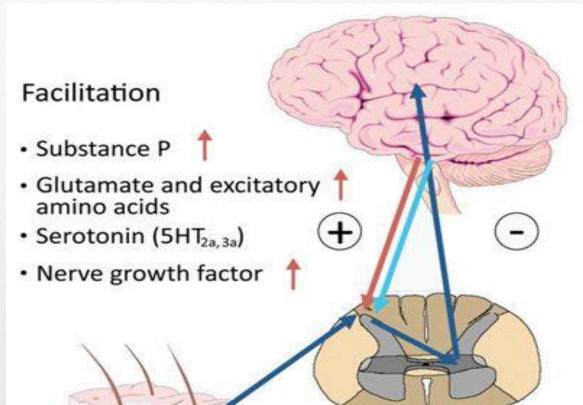






Mechanisms of central pain augmentation





Inhibition

- Descending antinociceptive pathways
 - Norepinephrineserotonin (5HT_{1a,b}), dopamine
 - Opioids



- GABA
- Cannabinoids

Some Important definitions:

- The term 'allodynia' describes a pain which is precipitated by an ordinary, non-noxious stimulus.
- The term 'causalgia' describes a pain which is characterised by a 'burning' sensation.
- The term 'neuralgia' can be used to describe any pain occurring in the distribution of a nerve or nerves.
- Hyperalgesia describes an exaggerated sensation of pain from a stimulus which would be painful in a normal subject.
- The term **dysaesthesia** is used to describe any form of inappropriate sensitivity (either increased or decreased), particularly to touch and pain. Thus allodynia is a form of dysaesthesia.
- Hyperpathia: characterised by increased <u>reaction</u> to a <u>stimulus</u>, especially a <u>repetitive</u> stimulus, as <u>well</u> as an increased <u>threshold</u>.



- Patients with fibromyalgia are much more sensitive to pressure.
- They also display decreased somatic thresholds to heat, cold, electrical, and sensory information other than somatic stimuli, such as auditory tones.
- Besides the common observance of diffuse *hyperalgesia/allodynia*, attenuated activity of descending analgesic pathways has been and may contribute to pain sensitivity.

- Central pain syndromes can be triggered in approximately 5%-10% of individuals who experience peripheral pain syndromes :
- Infections (eg, parvovirus, Epstein-Barr virus, Lyme disease, bacterial gastroenteritis).
- Physical trauma (eg, car accidents).
- Psychological trauma/distress.
- Hormonal alteration.
- Catastrophic events.

Core Treatment of Fibromyalgia

Confirm diagnosis Identify important symptom domains, their severity, and level of patient function Evaluate for comorbid medical and psychiatric disorders Assess psychosocial stressors, level May require referral to a specialist for full evaluation of fitness, and barriers to treatment Provide education about fibromyalgia Review treatment options. Initiate monotherapy on the basis of the patient's presentation and evidence-based guidelines

Modified from Arnold LM. Arthritis Res Ther. 2006;8:212 and Goldenberg DL, et al. JAMA. 2004;292:2388-2395.

Treatment:





- B) Physical therapy & Exercises
- C) Alternative therapy
- D) Psychotherapy & Vocational
- E) Diet & Nutrition





Pharmacologic Therapies in Fibromyalgia

Strong Evidence

- Tricyclic compounds (amitriptyline)
- Cyclobenzaprine
- Dual reuptake inhibitors
 - SNRIs and NSRIs (milnacipran*, duloxetine*, venlafaxine)
- Anticonvulsants (pregabalin,* gabapentin)

Modest Evidence

- Tramadol
- Selective serotonin reuptake inhibitors (SSRIs)
- Dopamine agonists
- Gamma-hydroxybutyrate

Weak Evidence

 Growth hormone, 5-hydroxytryptamine, tropisetron, S-adenosyl-L-methionine (SAMe)

No Evidence

 Opioids, corticosteroids, NSAIDs, benzodiazepine and nonbenzodiazepine hypnotics, guaifenesin

SNRIs=serotonin-norepinephrine reuptake inhibitors

Modified from Goldenberg DL, et al. JAMA. 2004;292:2388-2395.

FDA-approved agents for fibromyalgia.



Specific FDA approved drugs



Pregabalin (Alpha-2-delta ligands):



- FDA Approved in 2007
- Binds to calcium channels on nerves & modifies the release of neurotransmitters (50-300mg \day).
- Not recommended by many patients !!!!!
 (expensive –drowsy—weight gain)





*Milnacipran :FDA approved in 2009

R\ Savella

Effective in:

Pain-fatigue-depression

Side effects 3;

Nausea -- in up to 58 percent of people

Headache -- up to 26.1 percent

Drowsiness -- up to 23 percent

Dry mouth -- up to 22 percent

Insomnia -- up to 22.5 percent

Nervousness -- up to 21.3 percent



Cont. Specific FDA approved drugs

Serotonin/norepinephrine reuptake inhibitors (SNRI):

❖ **Duloxetine** : (R | Cymbalta 30-60-mg) FDA approved in 2008.

Very Effective in:

Pain-fatigue-depression

Insomnia -- in up to 10 percent

Side effects 0;

Nausea -- occurring in up to 25 percent of people

Dry mouth -- in up to 15 percent

Headaches -- in up to 14 percent

Drowsiness -- in up to 12 percent







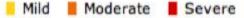
Cymbalta

Side effects as an overall problem

Severe	119	
Moderate	179	
Mild	213	
None	243	

Most commonly reported side effects

97	
90	
89	
76	
72	
57	
	89 76



Moderate Severe

Lyrica

Side effects as an overall problem

Severe	151	
Moderate	175	
Mild	158	
None	120	

Most commonly reported side effects

Weight gain	164	
Brain fog	102	The second second
Daytime sleepiness	95	
Dizziness	92	
Lack of concentration	81	
Blurry vision	76	

Art of Fibromyalgia Pharmacotherapy

- Individualize therapy
- Exhaustion and mood dominate: start with SNRI
- Pain and sleep dominate: start with antiseizure drug
- TCA in low dose at bedtime still can be effective
- For any drug: start low, go slow
 - Amitriptyline: 10 mg at bedtime
 - Duloxetine: 20-30 mg in the morning with food
 - Pregabalin: 50 mg at bedtime
 - Gabapentin 100 mg at bedtime
- Often will not achieve recommended dose because of adverse events
- May be better to add second drug rather than switch, but polypharmacy trials not yet published
- Nonpharmacologic therapy is as important as drugs
- Subset of patients requires multicomponent therapy





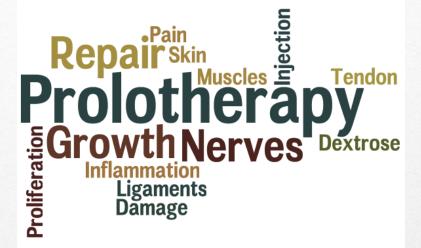
RECENT TREATMENT OPTIONS



- Homeopathy = homois (similar) + pathos (suffering)
- It's based on the principle that substances that cause symptoms in healthy people can be used in extreme dilution to treat illnesses that cause the same symptoms (likes cure like)
- Basically homeopathy allows the body to heal itself by triggering body's natural response
- Eg: caffeine can treat insomnia







Prolotherapy involves repeated injections of dextrose solution or other irritating substances into the joint, tendon, or painful tissue in order <u>to provoke a regenerative</u> tissue response



This is based on the theory that FMS & migraines are mitochondrial disorders and that mitochondrial dysfunction can be improved with coenzyme Q10. The Canadian Headache Society guideline recommends 300 mg of CoQ₁₀.







II) Non -Pharmacologic Therapy

Strong Evidence

- Exercise
 - Physical and psychological benefits
 - May increase aerobic performance, tender point pain pressure threshold, and improve pain
 - Efficacy not maintained if exercise stops
- Cognitive-behavioral therapy
 - Improvements in pain, fatigue, mood, and physical function
 - Improvement often sustained for months
- · Patient education and self-management
 - Improves pain, sleep, fatigue, and quality of life
- · Combination therapy

Modest Evidence

- Strength training
- Acupuncture
- Hypnotherapy
- EMG biofeedback
- Balneotherapy (medicinal bathing)
- Transcranial electrical stimulation

Weak Evidence

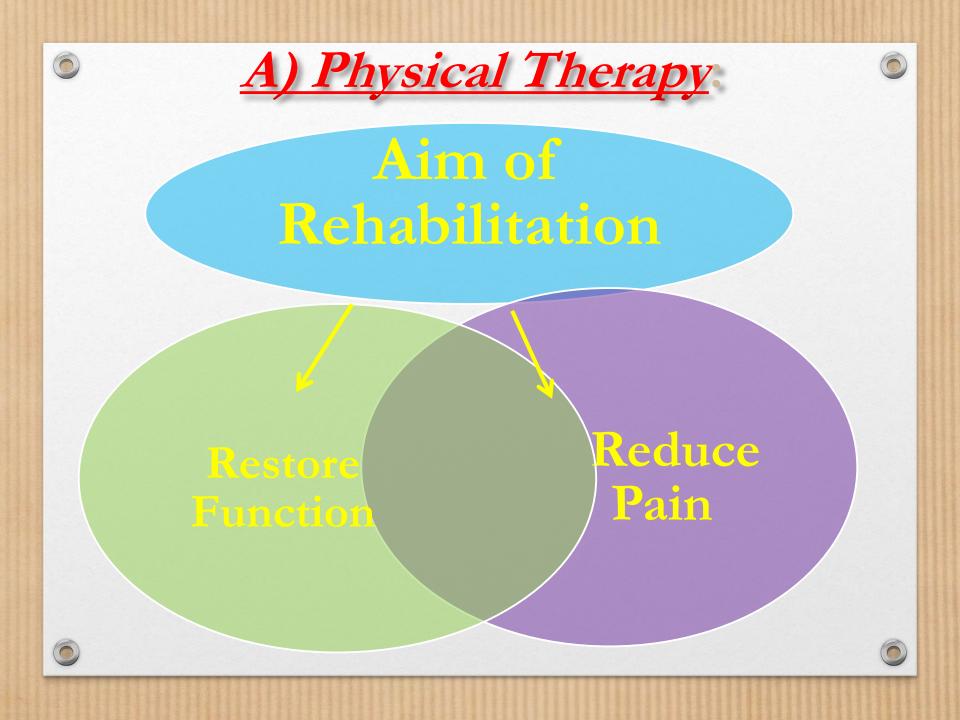
- Chiropractic
- Manual and massage therapy
- Ultrasonography

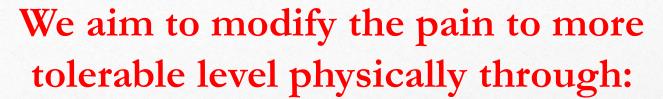
New Evidence

- Trigger-point injections
- Tai-chi, yoga

EMG = electromyography.

Goldenberg DL, et al. JAMA. 2004;292:2388-2395; Williams DA, et al. J Rheumatol. 2002;29:1280-1286; Busch AJ, et al. Cochrane Database Syst Rev. 2002











- Increases serotonin,
 which reduces pain
 naturally
- Naturally increases deep sleep
- Increases range of motion
- Lowers anxiety and improves mood





Stretching:

Spray and stretch technique using either <u>topical</u> <u>NSAIDS</u>, <u>anesthetics or ice</u> to stretch the involved muscle passively.







Transcutaneous electrical nerve stimulation (TENS).

High frequency ,low-voltage electrical current.

Small, battery-powered machine about the size of a pocket radio.

Pain relief by exciting sensory nerves and thereby stimulating either the pain gate mechanism &/ or the opioid system.



Biofeedback is a treatment technique whereby physiological information is measured and presented back to the client moment-by -moment through a computer monitor and audio signal

Patients learn to control bodily processes that are normally involuntary, such as muscle tension





Hydrotherapy

- Pain relief.
- •Reduction in muscle spasm.
- Increased joint range of motion.
- Strengthening of weak muscles.
- Increased circulation.
- •Improvement of balance and coordination.









The patients' fibromyalgia pain dropped by about 5 points on the McGill Pain Questionnaire Visual Analogue Scale after exercise.

The scale runs from 0 to 100. Conversely, their pain increased by about 7 points after quiet rest.

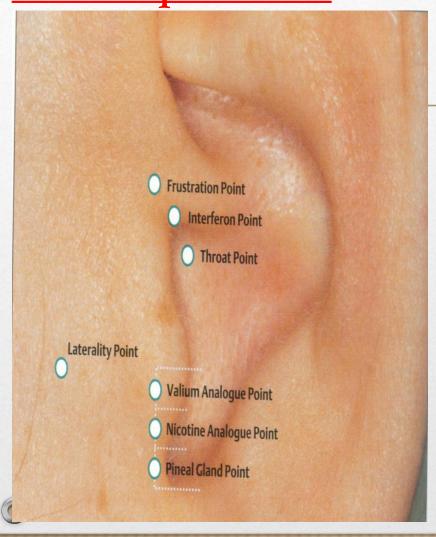
The brain scans showed <u>significantly greater activity</u> in the patients' left anterior insulae after exercise than after rest as well.

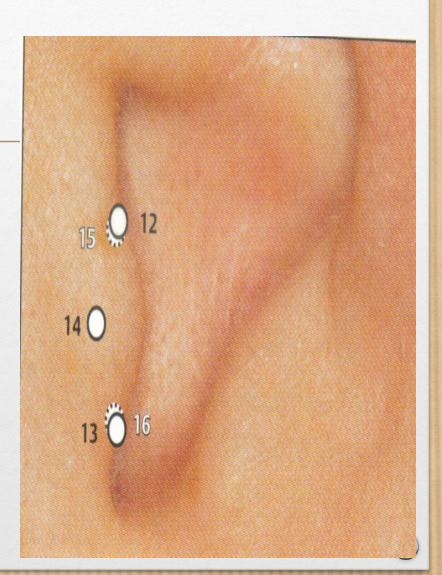
Dr Ellingson and Dr Kolber (American Pain Society (APS) 34th Annual Scientific Meeting. Presented May 13, 2015.

B) Alternative therapy:



Ear Acupuncture:





Cont. Alternative therapy

Breathing and relaxation training:

It can be used to manage stress, induce sleep and reduce muscle pain.

- Diaphragmatic deep breathing combined with relaxation.
- Better with <u>balneotherapy</u> (20-minutes bathing, once a day, five times per week for three weeks)







- It includes psycho education, group psychotherapy, learning the disease, re-assurance.
- Vocational: It is an important component of the psychological approach to chronic pain. It should stress on the motivation to return to work, reduce functional impairment and improve coping strategies.







D) Diet & Nutrition:

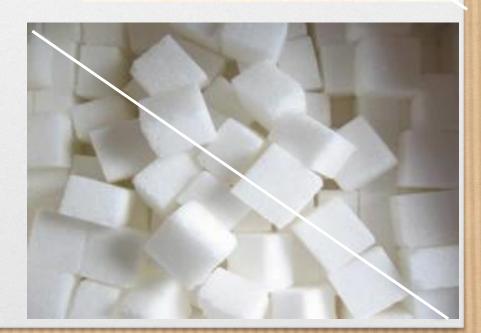




AVOID:















Who gets Juvenile Fibromyalgia??

- Girls more than boys.
- Commonest age from 12-16years (peripubertal).
- •Children with parents who have fibromyalgia, as fibromyalgia has a genetic component.
- Children who feel <u>constantly fatigued</u> or report not feeling well on a regular or prolonged basis.

N.B.

Pain, a common fibromyalgia symptom, may be confused in children with 'growing pains'. A child feeling excessive or persistent pain, check for fibromyalgia.







Management



- In children, it improves more quickly compared to adults.
- Treatment options for children include: education, medication, exercise and diet.
- Mild exercise, such as swimming, walking, stretching and biking can help.





